



1 GEO_09 - Using Census Data to Develop Geospatial Concepts

2 Subject Area

Geography

3 Suggested Level

Years 8-11

4 Key Statistical Literacy Competencies

- Data awareness
- The ability to understand statistical concepts
- The ability to analyse, interpret and evaluate statistical information
- Communicating statistical information and understandings

5 Overview

This classroom activity is designed to develop geographical concepts through the use of Census 2006 data. Census data are being delivered in a number of new formats which are free online.

QuickStats provides summary data in tabular form, **MapStats** creates maps from census data, **Census tables** provide detailed data as an Excel spreadsheet on a particular Census topic and **Community Profiles** provide a very detailed picture of an area. These products are available for areas as large as Australia or as small as a Collection District (about 230 households) and a range of geographic units in between. All are free on the web.

This activity asks students to create a map using **MapStats** for a chosen area such as a postcode, suburb or Local Government area. They should display the map for the area showing the Collection Districts in order to view the spatial variation within the district. The map produced is used to develop an understanding of spatial concepts such as location, scale, distance, distribution and spatial association.

6 Requirements

- Computer
- Internet connection



7 Instructions

7.1 Accessing Mapped Census Data

Census data are available from the Census section of the Australian Bureau of Statistics website at www.abs.gov.au/census. Articles in Education News (cat.no 1330.0) for 2007 illustrate how to search for Census data. The thematic maps produced through **MapStats** are generated in a three step process; choose the area, choose a topic and generate a map. Some of the **MapStats** topics include distribution of population by age groups, ancestry, birthplace by regions of the world, cultural and language diversity, household size and income, recent migrant arrivals, people with a disability and voluntary work.

Displaying the map using Collection Districts provides a detailed thematic map to examine distribution patterns in the area. By creating a map of a familiar area, students will be able to apply their prior knowledge to the location. Students should generate a thematic map of their chosen area showing Collection Districts shaded according to their chosen topic. A more detailed version of the map may be obtained by downloading the PDF version from the details tab on the screen. Examples are provided in Figures 1 and 2.

7.2 Developing Spatial Concepts

Students could work individually, in pairs or small groups to complete these activities.

7.2.1 Location

Use the maps generated by each student to complete the activities below.

1. Print out the detailed version of a map generated using **MapStats** as explained above. Begin by asking students to locate significant features in the mapped area in an appropriate way, e.g. main roads, open spaces, their home, school, sports club etc.
2. To test the ability of students to integrate appropriate geographic language, ask students to write a short description identifying the location of their home or a feature within the area.
3. Share the written descriptions created by the class and ask students to select the ones which provide the most accurate descriptions.
4. As a group, identify the requirements for describing a location accurately.
5. Discuss other methods for identifying the location of places in Geography, such as the use of a co-ordinate system on a topographic map and the use of latitude and longitude. This provides an opportunity to revise and practise these fundamental concepts.

7.2.2 Scale



Scale represents the size of one thing relative to another. On maps it is the ratio between the distances on the map compared to the actual distance on the ground. On a map scale is represented in three ways;

- As a line scale
- As a ratio (1: 100,000) or representative fraction (1/100,000)
- As a written scale (1 centimetre on the map represents 1 kilometre on the ground)

1. How is the scale represented on the map generated using **MapStats**?

The term scale may also be used to describe the size of a region being studied. For example, a local scale refers to a small area such as a shopping centre, a farm, suburb, postcode or town, a national scale covers a country and global scale covers large parts of the earth's surface.

7.2.3 Distance

Use the maps generated by each student to complete the activities below.

1. Use the scale provided on the map to calculate the distance across the district along its longest and its shortest axis.
2. Use the scale provided on the map to calculate the approximate area of the chosen district.

7.2.4 Distribution

Distribution is the arrangement of features on the earth's surface. A distribution may be described by using the following questions as a guide. Terms such as dense, sparse, dispersed, clustered, linear, radial or random may also be helpful when describing a distribution geographically.

- Is there a pattern?
- Is the pattern even or uneven?
- Where are there most or the highest concentrations?
- Where are there least or the lowest concentrations?
- Are there exceptions?
- What statistics are provided on the maps to support the statements made?

Use the thematic maps generated with **MapStats**, to complete the activities below.

1. For a chosen topic describe the distribution shown on the map.



2. Study the distribution pattern on the thematic map, and suggest possible reasons to explain the distribution identified.

7.2.5 Spatial Association

Spatial association is the relationship between the distributions of two or more characteristics of the earth's surface.

The association is strong when the two patterns are closely tied to each other. A strong association exists when patterns are very similar i.e. high values of one characteristic match high values of another (high rainfall and high altitude, high percentage of people undertaking voluntary work and a high percentage of people undertaking unpaid child care) or even when the patterns are inversely related (high rainfall and low population density as experienced in areas of rain forest). The association is weak when very few things happen in the same places.

1. For a chosen location, use **MapStats** to generate thematic maps for two different Census topics.
2. Print one map and use this as a base map.
3. Lay a piece of tracing paper over the base map and draw the Collection District boundaries. Shade the tracing map according to the legend provided for the second topic.
4. Describe and account for the degree of spatial association between the two topics shown by the thematic maps. Refer to attachments '**Figure 1**' and '**Figure 2**' on the website.

NOTE THAT THE MAPS GENERATED WITH **MAPSTATS** USE THE SAME COLOURS, BUT THE VALUES FOR CATEGORIES MAY VARY BETWEEN MAPS.

8 Glossary

Distribution

Distribution is the arrangement of features on the earth's surface.

Scale

On a map, scale is the ratio between a distance on the map compared to the actual distance on the ground.

Spatial association

Spatial association is the relationship between the distributions of two or more characteristics of the earth's surface.

9 References



(Note: Links to ABS publications are to the most recent release. Previous releases can be accessed by selecting the 'Past & Future Releases' tab.)

Census 2006 available on line at ABS website
<http://www.abs.gov.au/websitedbs/d3310114.nsf/Home/census>

10 Feedback

To provide any feedback regarding this activity, please contact ABS Education Services on 1800 623 273 or email education@abs.gov.au